# Customer Churn Dataset Documentation

## Dataset Overview

This dataset is used to build a machine learning model to predict customer churn in a telecommunications company. It includes customer demographics, service usage, account information, and interaction details. The goal is to identify which customers are likely to cancel their subscription.

## Data Source

- Origin: Telco Customer Churn Dataset (Kaggle)

- Records: 7,043 unique customer records

- Features: 21 columns (excluding target)

## Target Variable

- Column Name: Churn

- Type: Categorical (Yes/No)

- Description: Indicates whether the customer has churned

## Customer Demographics

- gender: Customer gender: Male, Female

- SeniorCitizen: 1 if senior citizen, else 0

- Partner: Whether the customer has a partner

- Dependents: Whether the customer has dependents

## Customer Account Information

- tenure: Number of months the customer has stayed

- Contract: Type of contract

- PaperlessBilling: Whether opted for paperless

- PaymentMethod: Payment method used

- MonthlyCharges: Monthly bill

- TotalCharges: Total amount charged

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## Service Details

- PhoneService: Whether customer has phone service

- MultipleLines: Whether has multiple lines

- InternetService: Type of internet service

- OnlineSecurity: Internet security service

- OnlineBackup: Cloud backup service

- DeviceProtection: Device protection plan

- TechSupport: Tech support access

- StreamingTV: Streaming TV subscription

- StreamingMovies: Streaming movies subscription

## Data Cleaning & Preparation

- Missing Values handled in TotalCharges

- Categorical Encoding via One-Hot and Label Encoding

- Feature Engineering: usage intensity, churn segments

- Scaling: StandardScaler for numerical features

## Notes & Considerations

- Target imbalance (~26% churn)

- SMOTE used for class balancing

- SeniorCitizen converted from numeric to binary categorical

## Example Record

- gender: Female

- SeniorCitizen: 0

- Partner: Yes

- tenure: 5

- Contract: Month-to-month

- MonthlyCharges: 75.5

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- InternetService: Fiber optic

- Churn: Yes